

Serial No. 10/533,628

**AMENDMENTS IN THE CLAIMS:**

1-6. Cancelled

7. (Previously Presented) An optical head for reading and/or writing data from/on a storage medium, the optical head comprising:

a light source;

an objective lens for focusing light, which has been emitted from the light source, onto a track of the storage medium;

light receiving means including at least one light receiving area for receiving a luminous flux of reflected rays, which have been reflected from the storage medium, thereby outputting a light quantity signal representing quantity of light received; and

tracking error signal generating means for generating a tracking error signal based on the light quantity signal,

wherein the luminous flux of reflected rays includes a first type of reflected rays where zero-order and first-order components of the light diffracted by the track are superposed one upon the other and a second type of reflected ray consisting essentially of the zero-order components, and

wherein as measured in a first direction in which the first type of reflected rays are arranged, the light receiving area has a size that is equal to or greater than the diameter of the luminous flux of reflected rays, and

wherein as measured in a second direction perpendicular to the first direction, the light receiving area is narrower than the first type of reflected rays.

Serial No. 10/533,628

8. (Currently Amended) The optical head of claim 7, wherein if the light source radiates light with a wavelength  $\lambda$ , the objective lens has a numerical aperture NA and the track has a period T, the optical head reads and/or writes data from/on a storage medium that satisfies the inequality:  $0.44 < \lambda / (NA \cdot T) - 1$ .

9. (Currently Amended) The optical head of claim 2 8, further comprising:

position signal detecting means for generating a position signal based on a light quantity signal representing a portion of the second type of reflected ray, which is not sandwiched between the reflected rays of the first type, the position signal representing a position of the objective lens in a direction perpendicular to the optical axis of light entering the objective lens; and

offset correcting means for correcting an offset to be produced in the tracking error signal due to a shift of the objective lens by reference to the position signal.

10. (Currently Amended) The optical head of claim 7, wherein if the light source radiates light with a wavelength  $\lambda$ , the objective lens has a numerical aperture NA and the track has a period T, the optical head reads and/or writes data from/on a storage medium that satisfies the inequality:  $0.40 < \lambda / (NA \cdot T) - 1 < 0.46$ .

Serial No. 10/533,628

11. (Currently Amended) The optical head of claim 5, further comprising light splitting means for splitting the luminous flux of reflected rays into the first and second types of reflected rays.

12. (Currently Amended) The optical head of claim 5 11, further comprising:

a holder for holding the light splitting means and the objective lens together; and

variation detecting means for generating a variation signal, representing a variation in light intensity distribution of the luminous flux of reflected rays on a boundary between two or more tracks with mutually different reflectances, based on the light quantity signal,

wherein the offset correcting means corrects the offset to be produced in the tracking error signal due to the variation in light intensity distribution by reference to the variation signal.

13. (Currently Amended) The optical head of claim 5 11, wherein the track of the storage medium has a wobble to store predetermined information thereon, and

wherein the optical head further includes wobble signal detecting means for generating a wobble signal, representing the wobble, based on the light quantity signal by performing computation processing on the position signal and the tracking error signal with the position signal multiplied by a prescribed coefficient.

Serial No. 10/533,628

14. (Currently Amended) The optical head of claim 6 12, wherein the track of the storage medium has a wobble to store predetermined information thereon, and

wherein the optical head further includes wobble signal detecting means for generating a wobble signal, representing the wobble, based on the light quantity signal by performing computation processing on the variation signal and the tracking error signal with the variation signal multiplied by a prescribed coefficient.

15. (Currently Amended) The optical head of claim 8 14, wherein the wobble signal detecting means sets the prescribed coefficient that reduces an offset variation of the wobble signal.

16. (Previously Presented) An optical head for reading and/or writing data from/on a storage medium having at least two tracks with mutually different reflectances, the optical head comprising:

a light source;

an objective lens for focusing light, which has been emitted from the light source, onto one of the tracks of the storage medium;

light receiving means including: a plurality of light receiving areas, which receive a first type of reflected rays where zero-order and first-order components of the light diffracted by the track are superposed one upon the other to generate a light quantity signal representing quantity of light of

Serial No. 10/533,628

the first type of reflected rays; and a non-light-receiving area, which is provided between the light receiving areas so as not to receive a second type of reflected ray consisting essentially of the zero-order components; and

tracking error signal generating means for generating a tracking error signal based on the light quantity signal.

17. (Currently Amended) The optical head of claim ~~10~~ 16, wherein the light receiving means further includes another light receiving area to generate a light quantity signal representing quantity of light of a portion of the second type of reflected ray, which is not sandwiched between the reflected rays of the first type, and

wherein the optical head further includes:

position signal detecting means for generating a position signal based on the light quantity signal representing the portion of the second type of reflected ray, the position signal representing a position of the objective lens in a direction perpendicular to the optical axis of light entering the objective lens; and

offset correcting means for correcting an offset to be produced in the tracking error signal due to a shift of the objective lens by reference to the position signal.

18. (Currently Amended) The optical head of claim ~~10~~ 16, wherein if the light source radiates light with a wavelength  $\lambda$ , the objective lens has a numerical aperture NA and the track has a period T, the optical head reads and/or writes data from/on a

Serial No. 10/533,628

storage medium that satisfies the inequality:  $0.44 < \lambda / (NA \cdot T) - 1$ .

19. (Currently Amended) The optical head of claim ~~12~~ 18, wherein as measured in a first direction in which the first type of reflected rays are arranged, each said light receiving area has a size that is equal to or greater than the diameter of the luminous flux of reflected rays, and

wherein as measured in a second direction perpendicular to the first direction, the light receiving area is narrower than the first type of reflected rays.

20. (Currently Amended) The optical head of claim ~~11~~ 17, further comprising light splitting means for splitting the luminous flux of reflected rays into the first and second types of reflected rays.

21. (Currently Amended) The optical head of claim ~~14~~ 20, further comprising:

a holder for holding the light splitting means and the objective lens together; and

variation detecting means for generating a variation signal, representing a variation in light intensity distribution of the luminous flux of reflected rays on a boundary between two or more tracks with mutually different reflectances, based on the light quantity signal,

wherein the offset correcting means corrects the offset to be produced in the tracking error signal due to the variation in light intensity distribution by reference to the variation

Serial No. 10/533,628

signal.

22. (Previously Presented) A drive for making an optical head, control signal generating means and driving means read and/or write data from/on a storage medium,

the optical head comprising:

a light source;

an objective lens for focusing light, which has been emitted from the light source, onto a track of the storage medium;

light receiving means including at least one light receiving area for receiving a luminous flux of reflected rays, which have been reflected from the storage medium, thereby outputting a light quantity signal representing quantity of light received;

tracking error signal generating means for generating a tracking error signal based on the light quantity signal; and

shifting means for changing a position of the lens parallel to the track responsive to a drive signal,

wherein the luminous flux of reflected rays includes a first type of reflected rays where zero-order and first-order components of the light diffracted by the track are superposed one upon the other and a second type of reflected ray consisting essentially of the zero-order components, and

wherein as measured in a first direction in which the first type of reflected rays are arranged, the light receiving area has a size that is equal to or greater than the diameter of the luminous flux of reflected rays, and

wherein as measured in a second direction perpendicular to the first direction, the light receiving area is narrower than the

Serial No. 10/533,628

first type of reflected rays, and

wherein the control signal generating means generates a control signal for controlling the position of the lens such that the light follows the track on the storage medium in response to the tracking error signal, and

wherein the driving means generates the drive signal for driving the shifting means in response to the control signal.

23. (Previously Presented) A drive for making an optical head, control signal generating means and driving means read and/or write data from/on a storage medium having at least two tracks with mutually different reflectances,

the optical head comprising:

a light source;

an objective lens for focusing light, which has been emitted from the light source, onto one of the tracks of the storage medium;

light receiving means including: a plurality of light receiving areas, which receive a first type of reflected rays where zero-order and first-order components of the light diffracted by the track are superposed one upon the other to generate a light quantity signal representing quantity of light of the first type of reflected rays; and a non-light-receiving area, which is provided between the light receiving areas so as not to receive a second type of reflected ray consisting essentially of the zero-order components;

tracking error signal generating means for generating a tracking error signal based on the light quantity signal; and

Serial No. 10/533,628

shifting means for changing a position of the lens parallel to the tracks responsive to a drive signal,

wherein the control signal generating means generates a control signal for controlling the position of the lens such that the light follows the tracks on the storage medium in response to the tracking error signal, and

wherein the driving means generates the drive signal for driving the shifting means in response to the control signal.